

CLAIMS

1. (Currently Amended) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil, the capacitive probe comprising:

a base portion;

a fastening device by which the base portion of the capacitive probe may be removably attached to an ignition coil housing of an ignition coil under test;

a positioning member connected to the base portion adapted to move along at least one axis relative to the base portion,

an arm connecting the positioning member to at least one of the base portion and the fastening device; and

a plurality of first and second capacitive sensors arranged on the positioning member, each capacitive sensor having an electrical lead connected thereto,

wherein the capacitance of the first capacitive sensor is different from the capacitance of the second capacitive sensor at least one of the positioning member and arm are adapted to move along or about at least one axis relative to the base portion.

Claim 2 (Cancelled)

3. (Currently Amended) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim 1 [[2]], wherein the first capacitive sensor and second capacitive sensor comprise metallizations having different areas.

4. (Original) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim 3, wherein an area of a first capacitive sensor associated with a positive going output of the ignition coil under test is larger than an area of a second capacitive sensor associated with a negative going output of the ignition coil under test.

5. (Currently Amended) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim [[2]] 1, wherein at least one of the first capacitive sensor and second capacitive sensor comprises a metal plate.

6. (Currently Amended) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim [[2]] 15, wherein at least one of the positioning member and arm are adapted to move along or about at least one axis relative to the base portion.

7. (Original) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim 6, wherein the arm comprises a curvilinear plate.

8. (Currently Amended) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim 2, the capacitive probe comprising:

a base portion;

a fastening device by which the base portion of the capacitive probe may be removably attached to an ignition coil housing of an ignition coil under test;

a positioning member connected to the base portion; and

first and second capacitive sensors arranged on the positioning member, each capacitive sensor having an electrical lead connected thereto,

wherein the first capacitive sensor is associated with a positive going output of the ignition coil under test and the second capacitive sensor is associated with a negative going output of the ignition coil under test, and

wherein a capacitor is ~~disposed to connected~~ connected to at least one of the first capacitive sensor and the second capacitive sensor ~~to at least one of the positioning member and the an arm~~ to substantially equalize an amplitude between the first capacitive sensor and the second capacitive sensor.

9. (Currently Amended) A diagnostic system for analyzing the operation of an engine, the diagnostic system comprising:

a capacitive probe for simultaneously detecting an amplitude of a first and a second electric near field proximate a hybrid or DIS ignition coil housing, the capacitive probe comprising a fastening device configured to removably attach the capacitive probe to the ignition coil housing and a body, the body bearing a first signal detector and a second signal detector,

wherein each of the first signal detector and a second signal detector are arranged adjacent a location of a respective one of the first and second electric near fields for detecting an amplitude of the respective electric near field,

wherein the first signal detector is different and the second signal detector have capacitances that are different, respectively, from each other, and wherein each signal detector outputs a signal representative of a respective electric near field.

10. (Original) A diagnostic system for analyzing the operation of an engine according to claim 9, the diagnostic system further comprising:

a signal processor for receiving the signals output from the capacitive probe and processing the signals.

11. (Original) A diagnostic system for analyzing the operation of an engine according to claim 10, the diagnostic system further comprising:

a reporting system for receiving signals processed by the processing system and generating a physical representation of the processed signals.

12. (Currently Amended) A method for simultaneously detecting a plurality of electric near fields proximate a hybrid or DIS ignition coil housing, comprising the steps of:

providing a capacitive probe comprising a fastening device configured to removably attach the capacitive probe to the ignition coil housing and a body, the body bearing a first signal detector and a second signal detector;

attaching the capacitive probe to the ignition coil housing;

positioning the first signal detector proximate a position of the ignition coil housing adjacent a location of a first electric near field;

positioning the second signal detector proximate a position of the ignition coil housing adjacent a location of a second electric near field;

simultaneously detecting the first electric near field using the first signal detector and detecting the second electric near field using the second signal detector, and

outputting from each of the first signal detector and second signal detector a signal representative of a respective one of the first and second electric near field, wherein
the first signal detector and the second signal detector have capacitances that are
different, respectively, from each other.

13. (Original) A method for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil housing according to claim 12, further comprising the step of:

processing a signal output by at least one of the first signal detector and second signal detector using at least one of a signal processor and amplifier.

14. (Original) A method for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil housing according to claim 12, further comprising the step of:

reporting at least one signal output by the first signal detector and second signal detector to at least one of a display device, a printing device, communication device, and a electronic storage device.

15. (New) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim 1, further comprising an arm connecting the positioning member to at least one of the base portion and the fastening device, wherein

the positioning member is adapted to move along at least one axis relative to the base portion, and

at least one of the positioning member and arm are adapted to move along or about at least one axis relative to the base portion.

16. (New) A capacitive probe for simultaneously detecting a plurality of electric near fields present proximate a hybrid or DIS ignition coil according to claim 8, further comprising an arm connecting the positioning member to at least one of the base portion and the fastening device, wherein

the positioning member is adapted to move along at least one axis relative to the base portion,

at least one of the positioning member and arm are adapted to move along or about at least one axis relative to the base portion, and

the capacitor connects at least one of the first capacitive sensor and the second capacitive sensor to at least one of the positioning member and the arm.